

## NEMATODES FROM AUSTRALIAN MARINE MAMMALS

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Very little attention has been paid to the nematode parasites of Australian marine mammals. The first to mention their presence was Krefft, who, in 1871, reported *Ascaris* sp. from *Delphinus forsteri* from Port Jackson. One of us (Johnston, 1937) recorded *Contracaecum osculatum* (Rud.) from the hair seal from Pearson Island, Great Australian Bight, the host being indicated as *Arctocephalus forsteri* in error for *Neophoca cinerea*, the former name being that reserved for a New Zealand seal. We reported the occurrence of *Anisakis kogiae* J. & M., *Porrocaecum kogiae* J. & M., and *Crassicauda magna* J. & M. from pigmy sperm whales, *Kogia breviceps* (Blainville) stranded in Moreton Bay, Queensland, and at Port Victoria, Spencer Gulf (Johnston and Mawson, 1939).

The material now reported on was collected by Dr. J. B. Cleland; the Australian Museum, Sydney; the South Australian Museum; the Tasmanian Biological Survey; and the senior author. The investigation has been assisted by the Commonwealth Research Grant to the University of Adelaide.

The following is a list of the parasites now recorded, arranged under their hosts:

*Dugong australis* (Owen), Cairns, North Queensland.

*Dujardinia halicoris* (Owen).

*Delphinus delphis* L.

*Echinocephalus uncinatus* Molin (probably ingested with the prey). St. Vincent Gulf, S.A.; *Anisakis simplex* (Rud.), Port Jackson, N.S.W.

*Tursiops truncatus* Montagu, Encounter Bay, S.A.

*Halocercus lagenorhynchi* Baylis and Daubney. Iredale and Troughton (1934, 68) regard the short-nosed dolphin of southern Australia as being distinct from Montague's species, and have named it *T. maugeanus*.

*Grampidelphis exilis* Iredale and Troughton, Manly, N.S.W.

*Crassicauda grampicola* sp.nov.

*Neophoca cinerea* (Peron and Lesueur), Pearson I., S.A.

*Contracaecum osculatum* Rud.

*Gypsophoca tasmanica* (Scott and Lord), Derwent Heads, Tasmania.

*Contracaecum gypsophocae* sp.nov., *Anisakis* sp.

*Hydrurga leptonyx* (Blainville), Port Adelaide, S.A.

*Anisakis similis* (Baird), *Contracaecum osculatum* (Rud.), *Phocascaris hydrurgae* sp.nov., *Contracaecum ogmorhini* sp.nov.

## CONTRACAEUM GYPSOPHOCAE sp. nov.

Fig. 1-2.

Numerous specimens from the Tasmanian fur seal, *Gypsophoca tasmanica* from Franklin Island, off Derwent Heads, Tasmania, collected by the Tasmanian Biological Survey.

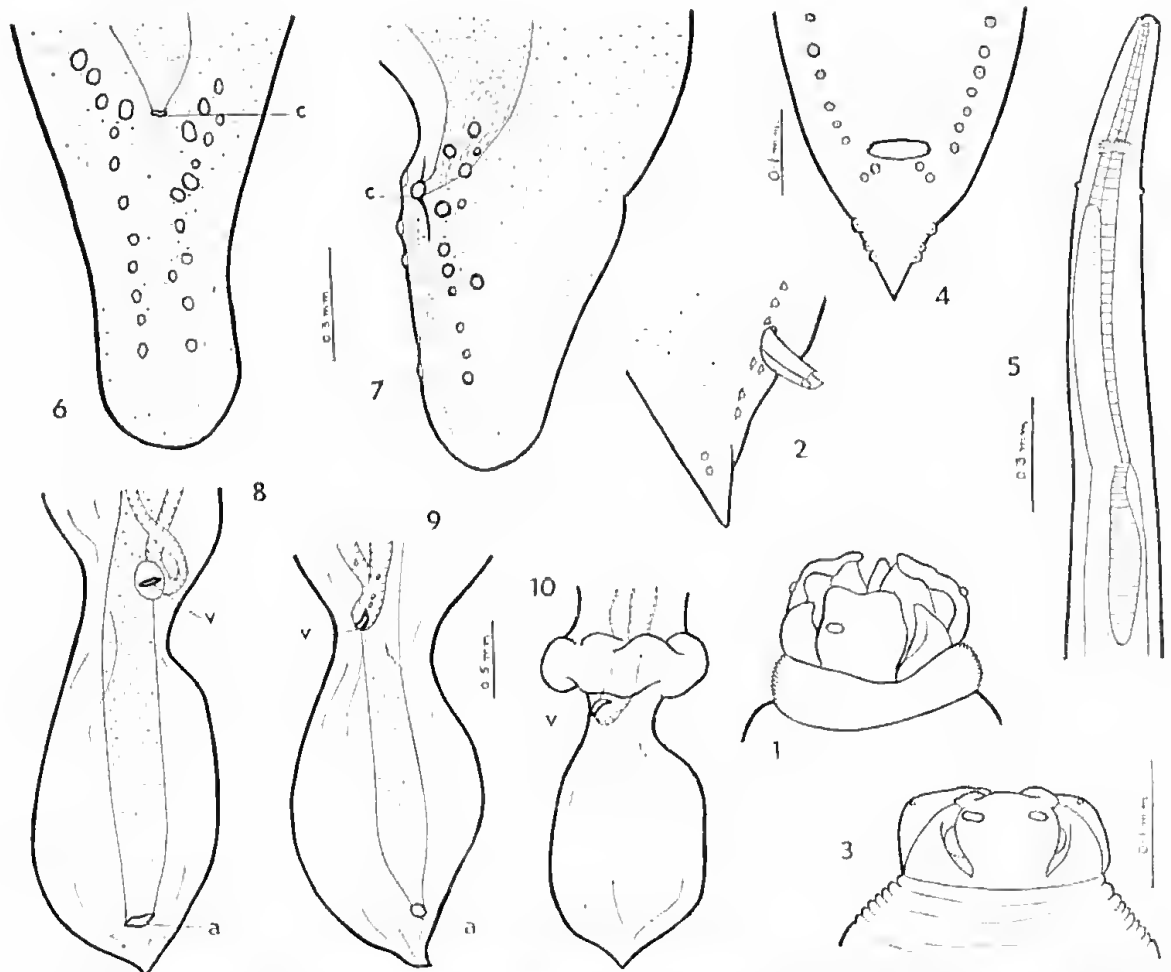


Fig. 1-2. *Contracaecum gypsophocae*: 1. head, 2. male tail. Fig. 3-4. *Contracaecum ogmorhini*: 3. head, 4. male tail. Fig. 5. *Phocascaris hydrurgae*: anterior end. Fig. 6-10. *Crassicauda grampicola*: 6. male tail ventral view, 7. male tail sublateral view, 8-10. posterior ends of females. Fig. 1, 6 and 7 to same scale; 8, 9, 10 to same scale. a, anus; c, cloaca; ep, cervical papilla; v, vulva.

Females 45-65 mm. long, 1.5-2 mm. wide; young adults, 35 mm. long, 1 mm. wide; immature worms 25 mm. Male (one specimen) 30 mm. long, 1 mm. wide. Lips short, wide, without marked lateral expansions; in female 45 mm. long, lips 0.5 mm. wide, 0.2 mm. long. Interlabia about two-thirds length of lips, with truncated extremity. Collar region about as wide as head, narrower than succeed-

ing part of body. Oesophagus one-seventh to one-ninth body length; appendix about one-sixth oesophageal length; intestinal caecum nearly reaching collar region. Nerve ring at about level of anterior end of caecum.

Male: Tail conical, 0.25 mm. long. Papillae six pair postanal arranged as in fig. 2, 12–14 pair preanal in single row on either side of body. Only one spicule seen, narrow, with wide alae, tip broken off, remainder 12.1 mm. long.

Female: Vulva at end of anterior third of body. Tail short, conical. Eggs 40 by 65 $\mu$ , smooth-shelled.

The species differs from others of the genus described from mammals in the arrangement of the caudal papillae and in the great length of the spicule. Type male and female in Tasmanian Museum, Hobart; paratypes in that Museum and in the South Australian Museum.

#### CONTRACAECHUM OSCULATUM (Rud.) Baylis.

The species has already been recorded by one of us (Johnston, 1937a) from the South Australian hair seal, *Neophoca cinerea*, incorrectly indicated as *Arctocephalus forsteri*, which is a New Zealand species.

#### CONTRACAECHUM OGMOHINI sp. nov.

Fig. 3–4.

From *Hydrurga leptonyx*, Port Adelaide, October, 1940.

Males up to 18 mm. long; females to 30 mm. Each lip with anterior lateral projection, dorsal lip with two, and laterals each with one large and one small papillae. Interlabia nearly as long as lips. Oesophagus  $\frac{1}{4}$ – $\frac{1}{10}$  body length. Oesophageal appendix  $\frac{1}{2}$ – $\frac{1}{3}$ – $\frac{1}{4}$  of intestinal caecum  $\frac{1}{4}$ – $\frac{1}{3}$ – $\frac{1}{4}$  of oesophageal length. Nerve ring about half, and cervical papillae three-quarters distance between head and anterior end of intestinal caecum. Male tail 0.2 mm. long, pointed; seven pair postanal papillae, arranged as in fig. 4; young males with twenty-three pair preanal papillae, older with about forty pair, the additional ones being much smaller. Preanal papillae always arranged in straight row on either side, the first ten on each side being closer together than the succeeding ones. Spicules equal, about one-third body length.

Female tail short, conical, 0.24 mm. long. Vulva two-fifths body length from head. Eggs about 39 $\mu$  by 40 $\mu$ . The species is distinguished from *C. gypsophocae* by the lengths of interlabia, of oesophageal appendix, and of intestinal caecum, and by position of nerve ring, and number of preanal papillae in male. In the relative lengths of oesophageal parts it resembles *C. osculatum*, but differs in position of

cervical papillae and size of eggs, as well as in the number of postanal and regular arrangement of preanal papillae in male.

The specific name is based on a synonymic name for the host genus.

*PHOCASCARIS HYDRURGAE* sp.nov.

Fig. 5.

Immature forms from a leopard seal, *Hydrurga leptonyx* Blainville, which came ashore from the Port River, Port Adelaide, in 1939. Worms about 6 mm. long, 0.35 mm. wide. Head without interlabia; dorsal lip with two papillae, ventrals each with one; dentigerous ridges absent. Oesophagus 1.2 mm. long, with appendix 0.6 mm. long; intestinal caecum 0.75 mm. long. Nerve ring at 0.32 mm., and small rounded cervical papillae at 0.37 mm. from head end. Tail conical, 0.15 mm. long.

In spite of the absence of teeth, as figured and described for *Phocascaris* by Höst, we have assigned our species to that genus, the absence of interlabia, combined with the presence of an oesophageal appendix and an intestinal caecum, precluding its entry into any other. The ratios of the parts of the alimentary canal and the position of the cervical papillae differentiate it from *P. phocae* Höst. Type and paratypes in the South Australian Museum.

*DUJARDINIA HALICORIS* (Owen) Baylis.

This large species was taken from an Australian dugong, *Dugong australis* Owen, from Yarrabali, near Cairns, North Queensland (Anstr. Museum, Reg. No. W2543).

*ANISAKIS SIMILIS* (Baird) Baylis.

Numerous immature females from *Hydrurga leptonyx*, from the Port River, Port Adelaide, in 1937 are assigned to this species. The shape of the lips, length of oesophagus and ventriculus, and position of the vulva agree with Baylis' description (1916, 370). The species had previously been recorded by one of us (Johnston 1937, 18) from a leopard seal from Macquarie Island.

*ANISAKIS* sp.

An immature female Anisakid worm was found in company with a number of *Contracaecum* from *Gypsophoca tasmanica*, Franklin Island, Derwent Heads, Tasmania (Tasmanian Biological Survey). Length 42 mm., width 0.9 mm. Head 0.23 mm. wide, 0.09 mm. long; ventral lips each with one papilla, dorsal lip with

two. Posterior limit of oesophagus not clear, but cannot be more than 5 mm. from head end. Cervical papillae large, slightly asymmetrically placed, 0.62 and 0.55 mm. from anterior end. Tail end rounded. The head resembles that of *A. similis* (Baird), but we consider it preferable to identify the worm as *Anisakis* sp.

*ANISAKIS SIMPLEX* (Rud.) Baylis.

Kreff's specimen of *Ascaris* sp. (1871, 212) from *Delphinus forsteri* L. from Sydney Harbour (Austr. Museum, Reg. No. G11105) has been re-examined. It is a male *Anisakis simplex*. According to Fredale and Troughton (1934, 65), *D. forsteri* is a synonym of *D. delphis*.

*HALOCERCUS LAGENORHYNCHUS* Baylis and Daubney.

Specimens agreeing with the description given by Baylis and Daubney (1925) were obtained from the lung of a short-nosed dolphin, collected by Dr. J. B. Cleland at Encounter Bay, S.A. According to Wood Jones (Handbooks South Austr. Fauna, Mammals, Part 3) the cetacean is *Tursiops truncatus* Montagu, but Fredale and Troughton (1934, 68) consider the southern Australian animal to be distinct from the European and have named it *T. maugeanus*.

*ECHINOCEPHALUS UNGINATUS* Molin.

A single immature worm was taken from the intestine of *Delphinus delphis* from St. Vincent Gulf. It agrees closely with Baylis and Lane's account (1920, 275) of larval forms from *Pinna* and *Myliobatis*. The presence of this parasite in a dolphin suggests that it was ingested along with its normal elasmobranch host. The worm is in a good state of preservation, though other nematodes taken along with it were in such an unsatisfactory condition as to be worthless for study.

*CRASSICAUDA GRAMPICOLA* sp. nov.

Fig. 6-10.

From the pterygoid fossa of a grampus stranded at Manly, N.S.W. (Austr. Museum, Reg. No. W2631). The label indicates the name of the host as *Grampus griseus*, but Fredale and Troughton (Rec. Austr. Mus., 19, 1933, 32) subsequently described the specimen as *Grampidelphis crilis* I. and T.

Several headless males and females; longest pieces 10 cm. in length; males 0.9 mm. wide; females 1.5 mm. wide.

Male: Posterior end without caudal alae or inrolling of lateral regions; no spicules present; small circular cloaca 0.7-0.8 mm. from bluntly rounded posterior

end; 13 papillae on one side, 12 on the other, arrangement asymmetrical and inconstant, generally a group of three or four on each side just in front of cloaca, the remaining papillae extending in a more or less straight line on each side toward posterior end of body.

Female: Tail varying in form, possibly with age; some elongate, some nearly as broad as long; all ending in short conical tip with anus at its base (fig. 6-8). Vulva in constriction around posterior end, as in other species of the genus; vagina very short; eggs oval, 29 by 40 $\mu$ . In one, apparently young, female there was very little constriction of the body at the level of the vulva.

Owing to the absence of head ends, the variation in the shape of the posterior end of females, and the fact that males have not been described for many species, we are unable to compare adequately our form with all those already named. *C. grampicola* is the first *Crassicauda* to be recorded from a grampus, and appears to be smaller than any described. The shape of the male tail and the position of the anus in the female indicate that we are dealing with a new species. Types in the Australian Museum, Sydney; paratypes in the Australian and South Australian Museums.

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